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September 25, 2003

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By:

[Signature]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

CORY PANATTONI

Application No.: 10/087,140

Filed: February 27, 2002

For: PREPARATION OF DEFECT-FREE POLYACRYLAMIDE ELECTROPHORESIS GELS IN PLASTIC CASSETTES

Customer No.: 20350

Confirmation No. 4424

Examiner: Yoon, Tae H.

Technology Center/Art Unit: 1714

**SUBMISSION UNDER 37 CFR 1.116
EXPEDITED PROCEDURE
EXAMINING GROUP 1714**

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Sir/Madam:

This paper is submitted in response to the Final Office Action mailed September 11, 2003 on the above-referenced application. In view of the explanations herein, reconsideration of the application is once again requested.

Rejection of Claims 1-3 and 6-9 Over Hochstrasser et al. in view of Alpenfels et al. or Lau et al.

As previously acknowledged, Applicant's invention is distinguishable over the disclosure of Hochstrasser et al. by the limitation of Applicant's invention to a plastic gel enclosure as compared to the glass gel enclosure addressed by Hochstrasser et al. While each of the secondary references, Alpenfels et al. and Lau et al., disclose both glass and plastic gel enclosures, neither secondary reference discloses the use of oxygen scavengers in general or any of the compounds that serve as oxygen scavengers in Applicant's invention. Although all three references address electrophoresis media, Applicant's discovery is nonobvious for two reasons. First, none of the three references address or even mention the problem that arises specifically with plastic gel enclosures and therefore none suggest that an additive which is disclosed for a different and unrelated purpose in a glass enclosure (where the problem does not arise) could solve this problem. Second, Applicant has shown by comparative test data that the additives produce the unexpected and beneficial result that is neither disclosed nor suggested by any of the three references.

The statement in the Office Action that Applicant's argument over the Hochstrasser et al. disclosure "has no probative value since the composition is the same" is respectfully traversed. The invention presently claimed is a *method*, not a composition, and the method involves the bringing together of two elements -- (i) a monomer mixture containing an oxygen scavenger and (ii) a plastic gel enclosure. No single reference discloses these two elements, and none of the references disclose this method.

The statement that "the air permeable plastic is neither a limitation nor claimed" is likewise traversed. Plastics are inherently air permeable. The examiner's reference to "Alss" in connection with the Alpenfels et al. disclosure fails to indicate otherwise. Whatever the examiner is referring to (there is no mention in the reference of anything identified as "Alss"), even if it has "little air permeability" this still indicates air permeability which is the source of the problem that Applicant's invention corrects.

Whether or not Alpenfels et al. teach any advantage of using a plastic gel enclosure in place of a glass gel enclosure is irrelevant to the present invention. What Alpenfels et al. do *not* teach is the advantage of using sodium sulfite or any other oxygen scavenger in a monomer mixture cast in a plastic gel enclosure. Applicant has in fact shown this advantage in the comparative data presented in the instant specification. Example 2 compares three different monomer mixtures in terms of the solute bands they produce during electrophoretic separations in plastic gel enclosures. One of the mixtures contains no oxygen scavenger, a second contains sodium sulfite (a representative oxygen scavenger) at a low concentration, and the third contains sodium sulfite at a higher concentration. The reported results indicate a distinct improvement attributable to the present of sodium sulfite. The comparison is repeated in Example 3, using a gel enclosure of different material (but still plastic), with the same or similar results. This comparative data establishes not only the utility of the invention but also its nonobviousness over the prior art.

The Lau et al. disclosure presents nothing of relevance beyond the fact that both glass and plastic gel enclosures are known. Here again, any *prima facie* obviousness is overcome by the comparative test data in the instant specification. Contrary to the reasoning stated in the Office Action, the chemical aspects are not disclosed by Hochstrasser et al., since Hochstrasser et al. do not address plastic gel enclosures, and the claims of present application are method claims that involve the use of a plastic gel enclosure. Lau et al. simply disclose what Applicant has already acknowledged, i.e., that both glass and plastic gel enclosures are known; Lau et al. do not offer any reason to believe that an additive disclosed elsewhere for use in a glass enclosure would produce any benefit in a plastic enclosure that it would not produce in a glass enclosure.

Rejection of Claims 1-9 Over Alpenfels et al. in view of Flesher et al. or Saunders

The citations of Flesher et al. and Saunders in combination with Alpenfels et al. are once again traversed in view of the lack of relevance of Flesher et al. and Saunders to either Alpenfels et al. or the present invention. It is well settled in patent law and in the United States

Patent and Trademark Office that the combination of unrelated references as grounds for an obviousness rejection is improper.

The following quote is from the January 18, 2002 decision of the Federal Circuit in *In re Lee*, 61 USPQ2d 1430-1436 (all emphases in the original):

When patentability turns to the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness. *See, e.g., McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001) (“the central question is whether there is reason to combine [the] references,” a question of fact drawing on the *Graham* factors).

“The factual inquiry whether to combine references must be thorough and searching.” *Id.* It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. *See, e.g., Brown & Williamson Tobacco Corp. v. Phillip Morris Inc.*, 229 F.3d 1120, 1124-25, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000) (“a showing of a suggestion, teaching, or motivation to combine the prior art references is an ‘essential component of an obviousness holding’”) (quoting *C.R. Bard, Inc. v. M3 Systems, Inc.*, 157 F.3d 1340, 1352, 48 USPQ2d 1225, 1232 (Fed. Cir. 1998); *In re Dembiczak*, 175 F.3d 994,999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) (“Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is a rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.”); *In re Dance*, 150 F.3d 1339, 1343, 48 USPQ2d 1635,1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); *In re Fine*, 837 F.2d 1071, 1075, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988) (“the teachings of references can be combined *only* if there is some suggestion or inventive to do so.”) (emphasis in original) (quoting *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572-1577, 221 USPQ 929,933 (Fed. Cir. 1984)).

The rejection fails to cite any portion of the disclosures of either Flesher et al. or Saunders that would motivate one to combine them with a disclosure such as Alpenfels et al. which is in entirely unrelated area. Nor does the rejection cite any portion of the disclosure of Alpenfels et al. that would motivate one to combine it with the disclosures of Flesher et al. or Saunders. Neither Flesher et al. nor Saunders discuss electrophoretic methods, neither one discloses glass or plastic gel enclosures, and neither one even discloses gels.

It is also well settled in patent law and in the United States Patent and Trademark Office that non-analogous art is not prior art, and elements from non-analogous sources are not properly combinable as prior art. The following is a quote from the 1992 Federal Circuit decision in *In re Oetiker* (977 F.2d 1443, 25 USPQ2d 1443):

Patent examination is necessarily conducted by hindsight, with complete knowledge of the applicant's invention, and the courts have recognized the subjective aspects of determining whether an inventor would reasonably be motivated to go to the field in which the examiner found the reference, in order to solve the problem confronting the inventor ... [I]t is necessary to consider the "reality of the circumstances", -- in other words, common sense -- in deciding in which fields a person of ordinary skill would reasonably be expected to look for a solution to the problem facing the inventor ... The combination of elements from non-analogous sources, in a manner that reconstructs the applicant's invention only with the benefit of hindsight, is insufficient to present a *prima facie* case of obviousness.

A "two-step" test for determining whether particular references are within the appropriate scope of the art was set forth by the 1986 Federal Circuit decision in *In re Deminski* (796 F.2d 436; 230 USPQ1313). According to this test, it must first be determined whether the reference is "within the field of the inventor's endeavor." Second, "reasonably pertinent to the particular problem with which the inventor was involved."

Neither the standard set by *In re Oetiker* nor the two-step test of *In re Deminski* are met in the present rejection. The subject matter of the Flesher et al. disclosure is "dewatering of cellulosic or other suspensions" (column 7, lines 37-38) with "particular value in the centrifugal dewatering of municipal sewage" (column 7, lines 63-64), and the subject matter of the Saunders disclosure is "flocculants for suspended solids in water and as strengthening agents for paper" (column 1, lines 61-64), and "for the clarification of drinking water" (column 2, line 1). Neither of these are "within the field of endeavor" of either Hochstrasser et al. or the applicant in the present invention as expressed in the Hochstrasser et al. disclosure or applicant's disclosure, and no person of ordinary skill "would reasonably be expected to look for a solution to the problem facing the inventor" by consulting disclosures in either municipal sewage treatment or drinking water when the inventor is working in laboratory electrophoresis.

Accordingly, this combination of references is improper and does not form a sound basis for an obviousness rejection.

Rejection of Claims 1-13 Over Ogawa in view of Hochstrasser et al., Flesher et al., or Saunders, and further in view of Alpenfels et al. or Lau et al.

The citation of the oxidation inhibitors of the Ogawa disclosure as suggestive of the use of oxygen scavengers in the present invention is again traversed. The two classes of reagents are indeed very much different in both structure and function. An oxidation inhibitor is a species that deactivates free radicals. This is known in the art and explained, for example, in Southwick et al., U.S. Patent No. 4,925,578, at column 7, lines 35-44, in connection with the oxidation inhibitor 2-mercaptobenzothiazole (2-MBT). This section of the patent is quoted below:

The explanation for this result lies in the role the alcohol plays in the thermal-oxidative degradation process. Unlike 2-MBT, which functions as a true oxidation inhibitor by deactivating free radicals, an alcohol deactivates free radicals, but in the process becomes a free radical itself. Consequently, while 2-MBT stops the chain of free radical reactions that lead to polymer degradation, an alcohol can only modify that chain.

An oxygen scavenger, by contrast, is a reducing agent that reacts with molecular oxygen, as described in Pakulski et al. U.S. Patent No. 5,362,408, at column 1, lines 57-66, which is quoted below:

When first introduced, oxygen scavengers were seen as agents which "remove" dissolved oxygen. However, the "removal" of dissolved oxygen from water is actually a chemical reduction of zerovalent molecular oxygen to compounds in which this element appears in the lower -2 oxidation state. The reduced oxygen combines with an acceptor atom, molecule, or ion to form an oxygen-containing compound. Hence, all oxygen scavengers are reducing agents, although not all reducing agents are necessarily oxygen scavengers.

The skilled chemist will not consider a reducing agent as an obvious substitute for a compound that deactivates a free radical reaction. Likewise, none of the oxygen scavengers in Applicant's disclosure are mercapto compounds (as are the oxidation inhibitors of Ogawa) or

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will deactivate a free radical. With these distinctly different mechanisms, the use of an oxygen scavenger is not obvious over the use of an oxidation inhibitor.

The distinctions relating to the remaining references are as explained above.

For all of these reasons, Applicant once again submits that all claims pending in this application recite patentable inventions and that the application is in condition for allowance. Accordingly, reconsideration of the application is respectfully requested. Should any matters remain that can be resolved by a conference with Applicant's attorney, the examiner is encouraged to telephone the undersigned at 415-576-0200.

Respectfully submitted,



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